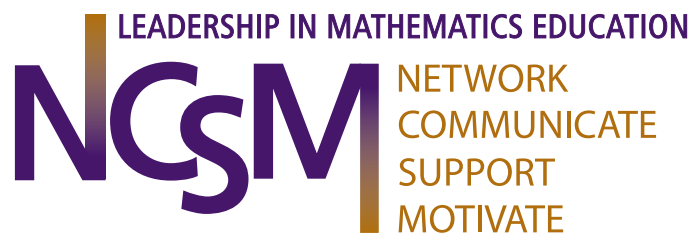


Research-Informed Answers for Mathematics Education Leaders

Improving Student Achievement by Infusing Highly Effective Instructional Strategies into Multi-Tiered Support Systems (MTSS)–Response to Intervention (RtI) Tier 2 Instruction

“The heart of any Response-to-Intervention model lies in the use of tiered instructional processes.”

Edward S. Shapiro

Our Position

It is the position of the National Council of Supervisors of Mathematics (NCSM) that a Multi-Tiered Support System (MTSS)–Response to Intervention (RtI) is a vital process for improving instruction and providing academic and social-behavioral support to all students. It should be implemented to ensure success for every student in every classroom. The MTSS is a systematic method of identifying, defining, and resolving students’ academic and social-behavior difficulties using collaborative, school-wide, problem solving approaches. Students not making adequate progress at Tier 1 (approximately 10–15% of a class) are required to receive *supplemental*, temporary, and different support in Tier 2 as identified by assessment screening data and teacher recommendations (see NCSM Position Paper #12 on Tier 1, Spring 2013). The MTSS occurs within a strong comprehensive system of school improvement where learning environment, mathematics curriculum, and delivery of instruction are analyzed for the purpose of student response to differentiation. (Note: MTSS–RtI is not considered a special education eligibility system to place students in special needs programs. Instead, it is a comprehensive and continuous process to identify possible solutions to the instructional needs of students before learning gaps become severe.)

It is within Tier 2 that the problem-solving process begins. A school-based problem-solving (RtI) team is identified to coordinate all activities. The team consists of individuals pivotal to the collaborative process including teachers, coaches, administration, social workers, psychologists, and support staff. The team collects and analyzes universal screening and progress-monitoring data (formative assessments) in order to identify students who have fallen below the expected behavior expectations and/or levels of accomplishment (benchmarks) and therefore are in need of supplemental instruction or support (Gresham & Little, 2012a). As required, the team retrieves behavioral data, such as attendance records, referrals, and teacher interviews.

After data are carefully analyzed the team designs the best intervention for the specific student need. Consideration is given to social and environmental factors for students struggling with inappropriate behaviors. When screening and formative assessment data are not sufficient to determine the student’s instructional need, a diagnostic assessment may be given to help determine the appropriate intervention. Students in Tier 2 may be at some risk of academic failure yet above levels considered to indicate high risk of failure. However, some students may need only a small amount of extra assistance. Once students are selected for supplemental intervention, typically delivered in small groups, their progress is actively and frequently monitored.

Within Tier 2, a small group of identified students reengage in mathematical tasks (often 30 minutes or

less) outside of Tier 1 instruction. Tier 2 intervention is significantly different, targeted, and based upon careful analysis of student data. It casts a safety net that is *in addition to* Tier 1 instruction by focusing on specific mathematical skills and content. For example, student thinking is critiqued to determine specific approaches or a student has opportunities to view a task from different perspectives. Tier 2 is not “drill and kill” or a time to “fix” a student; rather it is an enhancement of the mathematical script to actively engage and motivate the learner through increased instructional time, narrowed focus, and reduced group size. It is also a time to help students develop different skills and strategies in response to a behavioral challenge or for adults to determine ways to modify a student’s environment.

Within Tier 2, differentiated instructional strategies, such as individualized learning plans, flexible grouping, and alternative instructional approaches, are embedded to address different student profiles and needs. The problem-solving team actively monitors the effectiveness of selected strategies and the fidelity of implementation (meaning the interventions must be delivered as developed or designed). The team analyzes data in order to determine effectiveness of strategies with the goal of improving educational outcomes for all students (Jenkins, 2003; Fuchs & Fuchs, 2005). There should be fluid movement into and out of Tier 2 intervention.

There are important questions for leaders and teachers to consider and review for Tier 2: 1) Are standardized test data consistent with school screening data? 2) Are error patterns consistent or different among different groups of students? 3) What specific content standards are students mastering compared to standards in need additional instruction? Students not making adequate progress in Tier 2 (approximately 1–5%) are required to participate in more intensive instructional experiences delivered either one-on-one or in very small group settings or Tier 3 intensification. These students are at a high risk of failure. Intensification is provided in addition to and in alignment with Tier 1 instruction and Tier 2 intervention. Tier 3 includes the most instructional minutes and is more narrowly focused on specific learning needs. As with Tier 2, Tier 3 teachers need to be experts in helping students overcome academic and social-behavioral challenges.

Research That Supports Our Position

There is increased emphasis on accountability for high-quality instruction and appropriate intervention for *all* students in mathematics classrooms across the United States (Hoover & Love, 2011; NCTM, 2007; USDE, 2010). As a result, *how* to teach and *how* students learn mathematics is changing. “MTSS leverages the principles of Response to Intervention (RTI) and Positive Behavior Intervention and Supports (PBIS) and integrates a continuum of system-wide resources, strategies, structures and practices” (Higgins & Rinaldi, 2011). The process is focused on the progress of students through the effective use of evidence-based instruction, interventions, and continuous progress monitoring (IDEA, 2004). Student success is influenced by planning and implementing interventions with fidelity (as designed) and based on individual need. Adjustments are made to instruction (academic and behavioral) by continuously collecting and examining student progress-monitoring data (Hoover & Love, 2011).

Student learning data must be aligned to state and district curriculum standards and benchmarks (Fuchs & Fuchs, 2005; USDE, 2010). A goal is for data to communicate a continuous improvement cycle of student learning (NMAP, 2008). Tier 2 interventions are made readily available to students as soon as their mathematical needs are identified and are provided in small groups by a teacher or interventionist (Gresham & Little, 2012a; 2012b). It is critical to note that if more than 10–15% of students are in need of Tier 2 supports, then careful attention must be given to the teaching and learning processes within Tier 1 instruction. This is to ensure that instruction consists of evidence-based practices taught with fidelity so that all students are mastering the curriculum.

How NCSM Members Can Implement Our Position

NCSM believes that Tier 2 teachers must:

- Possess strong mathematics content, pedagogical and curricular knowledge;
- Implement academic and social-behavioral instructional plans as outlined by the problem-solving team;

- Analyze classroom academic and behavioral data to further identify the causes of low academic or behavioral performance;
- Resist the urge to just demonstrate procedures and articulate rules;
- Plan launch activities to develop interest and context;
- Provide guidance and explicit instruction during teachable moments after observing behaviors, providing feedback and asking questions;
- Gauge student understanding through probes, questioning, and use of immediate feedback;
- Teach for understanding by using a variety of instructional methods;
- Provide multiple representations of content by using charts, illustrations, diagrams, maps, effective discourse strategies, and technology;
- Have knowledge of in-depth diagnostic teaching strategies, such as error analyses, precision teaching, and targeted diagnostic assessments;
- Limit transitions by providing longer engagement or “doing” mathematics periods;
- Provide opportunities for students to explain thinking and justify work;
- Connect among mathematical ideas using whole class summary discussions, modeling, guided practice, and independent practice;
- Receive ongoing professional development on intervention and differentiated instruction.

- Additionally, NCSM believes mathematics leaders must:
- Ensure the development of strong, diverse problem-solving teams;
 - Schedule sufficient time for problem-solving teams to meet;
 - Provide access to academic data sources, including observations, formative assessment, curriculum-based measurements (CBM), and interviews;
 - Provide access to behavioral data sources;
 - Assist in the development of strong data-driven intervention plans that coordinate time, regrouping and scheduling of students within the school day, outside of core instruction;
 - Assist teachers in identifying or developing resources and materials to differentiate instruction to meet the specific needs of students;
 - Ensure the development of instructional procedures to improve social behaviors;
 - Identify all progress-monitoring measures and evidence-based interventions for additional information to provide more intensive instruction (i.e., increased instructional time, narrowed focus, and reduced group size);
 - Ensure confidentiality of all student data sources;
 - Develop a variety of data communication tools such as summaries, graphs, charts, or spreadsheets;
 - Provide for professional development to increase knowledge and skills in all areas of implementation.

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Mission Statement

The National Council of Supervisors of Mathematics (NCSM) is a mathematics leadership organization for educational leaders that provides professional learning opportunities necessary to support and sustain improved student achievement.

Vision Statement

NCSM envisions a professional and diverse learning community of educational leaders that ensures every student in every classroom has access to effective mathematics teachers, relevant curricula, culturally responsive pedagogy, and current technology.

To achieve our NCSM vision, we will:

- N: Network and collaborate with stakeholders in education, business, and government communities to ensure the growth and development of mathematics education leaders
- C: Communicate to mathematics leaders current and relevant research; and provide up-to-date information on issues, trends, programs, policies, best practices and technology in mathematics education
- S: Support and sustain improved student achievement through the development of leadership skills and relationships among current and future mathematics leaders
- M: Motivate mathematics leaders to maintain a life-long commitment to provide equity and access for all learners

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